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# SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE

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See Page 73

A SCIENCE SERVICE PUBLICATION

## PUBLIC HEALTH

## Safe Seasonings Named

SOME 150 seasonings and flavorings—ranging from the familiar cinnamon to exotic “ylang-ylang”—have been put on the safe list, the Food and Drug Administration has announced.

Manufacturers who use these flavors in their food products need not furnish further proof of their safety. The list includes cloves, nutmeg, thyme, vanilla, mace, savory, coriander and extracts of spike lavender, wild cherry bark and balsam of Peru.

Ylang-ylang, an essence from the fragrant flowers of the custard-apple tree grown in the Philippines and Malaysia, is one of the flavorings more familiar to gourmets or the commercial food processor.

Seven flavoring substances are on the “wait and see” list, however. Safe usage for these is not “sufficiently well established among qualified experts to permit a formal determination by FDA that they are generally recognized as safe.” They include quinine, red and yellow cinchona barks, two forms of orris root, and wintergreen and methyl salicylate.

The quinine and cinchona barks are used

in “tonic” carbonated water, while wintergreen and methyl salicylate—chemically identical—have been used in candy for many years.

Studies to determine the safety of the candy flavorings are expected to be completed in about a year, the FDA reported. No action will be taken against foods flavored with oil of wintergreen or with methyl salicylate, however, since the amounts required for flavoring are small and there is no evidence of danger.

Levels of safe usage for the quinine, cinchona and orris will be set up by regulations issued in response to petitions from interested users, the FDA said.

In another action to keep food products safe to eat, the FDA announced that the pesticide heptachlor could not be used if residues appeared on harvested crops. New scientific data show that a breakdown product of the pesticide heptachlor epoxide is found on treated crops. In addition, residues of the epoxide appear in meat and milk when feed containing it is given to meat and dairy animals.

Science News Letter, January 30, 1960

## NAVIGATION

## Merchant Marine Declining

THE DETERIORATION of the United States merchant marine, a matter of vital concern to the Government, industry and the military services, can be checked only by drastic improvement of cargo-handling and ship-operating efficiency.

This warning was contained in a report issued by a panel of the National Academy of Sciences-National Research Council. The report was prepared by a nine-man advisory panel on the wartime uses of the U. S. merchant marine headed by Adm. Arthur W. Radford, USN (Ret.), a former chairman of the Joint Chiefs of Staff.

To avoid complete dependence on foreign-controlled shipping for the maintenance of its military and commercial lifelines, the report warned, the U. S. must carry out these improvements and make significant advances in ship design and construction.

The advances, according to the report, are technologically practical and can be commercially successful with minimum subsidy.

The report recommends construction of a “new class of cargo vessels of advanced design with speeds in excess of 20 knots” (about 23 miles per hour). Present cargo ships average about 16.5 knots, or 18.6 mph. These ships should incorporate a unitized system of cargo handling, embody increased mechanization, and permit automation, to reduce stevedoring costs, and allow quick turn-around of the ship.

Increasing the productivity of labor and management is a “more constructive alternative to subsidization,” the report said, but in both subsidized and unsubsidized seg-

ments of the U. S. maritime industry there is a “general lack of incentive to take advantage of technological advances.”

The report cited the following symptoms of deterioration and decline in the nation's merchant marine.

1. Most of its ships are nearly overage and long outmoded. As of July 1, 1959, the privately owned U. S. merchant fleet numbered 1,013 ships, of which about 800 were constructed before the end of World War II.

2. U. S. flag shipping is carrying a steadily decreasing portion of U. S. foreign trade (18% in 1957 and 12% in 1958).

3. The country is in danger of losing its “flag of convenience” fleet, which carries about one-third of its foreign trade. This fleet is comprised of U. S.-owned vessels flying the flags of Panama, Liberia or Honduras. Attacks on this arrangement by U. S. labor unions and some foreign interests have brought threats from the owners to transfer to the flags of traditional maritime nations.

The report recommended that the Government take the lead “in enlisting the cooperation of maritime labor and management to produce a technologically feasible fleet which will be competitive with minimum subsidy.”

The panel urged the establishment of a Federal agency to determine ways in which the transition to mechanized and automated production can be accomplished without undue harm to labor. It also stressed that consideration should be given to the de-

sign and construction of an experimental aluminum cargo ship.

Four possible courses of action were outlined for accomplishing an effective transition to more mechanized and automated crew and cargo handling procedures. These were taking maximum advantage of the natural attrition from the available work force, lowering retirement ages, retraining and relocating workers both within and without the industry, and adjusting salaries and increasing fringe benefits for those workers who remain in the industry.

Science News Letter, January 30, 1960

## ASTRONAUTICS

## Eight-Hour Working Day Unlikely for Space Crews

LABOR UNIONS may have to develop local number “outer space” because there probably will be no such thing as an eight-hour work day for space crews.

Dr. George T. Hauty, psychiatrist at the School of Aviation Medicine at Brooks Air Force Base, Texas, said recent short-term, simulated space flights have indicated that, although not desirable, a schedule of six hours of work followed by a two-hour rest period can be well-tolerated by trained pilots.

This amounts to an 18-hour work day and is probably the greatest work load a man can tolerate in one day without losing his efficiency, Dr. Hauty told scientists at a space medicine meeting.

Trained pilots appeared to be the best for one-man flights, he said. Conditions inside the compartment give the pilot the impression he is cruising in space. Any astronaut candidate should go through this type of conditioning, the psychiatrist suggested.

The men are given duties to perform during the work hours. These duties range from contacting the “ground,” actually observers outside the simulated cabin, to taking their body temperature and measuring the humidity of the air in the cabin, in addition to recording readings on the instrument panel.

However, only one man is in the cabin at any time, so he alone is responsible for gathering the data.

Tests have been run to determine how long one man can function properly alone in such a cabin. Some men experience hallucinations after staring at the instrument panel for various numbers of hours, Dr. Hauty reported.

One man saw gremlins on the panel and described them in great detail. Another swore that the television set was turning brown and getting hot. He predicted that it would explode. Another subject, after 18 hours, saw kittens and Indians on the panel.

With such information scientists hope to determine approximately how long a man can operate efficiently in a one-man vehicle. Scientists are also experimenting with a two-man cabin from which they expect to establish a definite two-man schedule of six work hours and two rest hours or possibly some other combination.

Science News Letter, January 30, 1960

## METEOROLOGY

# Gulf Stream Warms

Variations in the North Atlantic sea surface temperatures, measured from the 1880's to the beginning of World War II, point to a long-term warming of the Gulf Stream.

THE GULF Stream along the United States coast warmed up some five degrees Fahrenheit in a 60-year period, Prof. J. Bjerknes of the University of California at Los Angeles reported.

He told the American Meteorological Society meeting in Boston, Mass., that this long-term warming seems to be related to an observed increasing strength of the high pressure area known as the Bermuda High. This is a semi-permanent center of action bringing warm and humid conditions to the eastern United States when it is well developed.

Dr. Bjerknes said the long-range Gulf Stream warming was found in preliminary investigations of the variations of North Atlantic sea surface temperatures from the 1880's to the beginning of World War II. The highest warming was found along the Gulf Stream from Cape Hatteras, N. C., to the southern edge of the Newfoundland Banks.

Warming of a lesser amount was found in most other parts of the Gulf Stream,

except for a small temperature decrease in a zone west of Ireland.

The increased strength of the Bermuda High, Dr. Bjerknes said, has speeded up the shifting of warm water and may also have led to a slight northward displacement of the Gulf Stream.

Although the Gulf Stream warming trend has lasted through the whole period, the changes of sea surface temperatures over the rest of the North Atlantic show a warming and then a cooling at intervals of a few years.

Dr. Henry Stommel of Woods Hole Oceanographic Institution, Woods Hole, Mass., reported that he had devised a theoretical model of ocean circulation showing how it changes in combination with weather conditions at the surface.

Even though the oceans as a whole are stable, mixing processes do occur, and Dr. Stommel suggested one new method to account for such mixing.

The ordinary salt, or sodium chloride, dissolved in ocean water diffuses through

the water much more slowly than heat. A particle moving up through the ocean will release its heat until it is at the same temperature as its surroundings. Theoretically the particle then has no buoyancy. However, Dr. Stommel's studies have indicated, the particle continues to move up because of its dissolved salt content. Such motions due to salt buoyancy on a large scale could account for ocean mixing, Dr. Stommel believes.

## Clue To Past Climates

A CLUE to climates of the past is locked in the ice of glaciers, scientists at the Meteorological Society meeting learned.

Prof. Samuel Epstein of California Institute of Technology, Pasadena, Calif., reported that the ratio of normal oxygen-16 to oxygen-18 is a clue to past weather history. This ratio can also be used to trace the current cooling of air masses during storms and the transfer of water from equatorial regions to cold areas.

He said the two oxygen isotopes evaporate and condense at slightly different rates. The ratio between the two thus gives the history of the water both in its recent and far distant past.

## Better Predictions Seen

METHODS of weather forecasting will leap ahead faster during the next 15 years than they have since the end of World War II. This was predicted by weathermen gathered for the 40th anniversary meeting.

Many meteorologists at the meeting voiced optimism concerning the new knowledge of how the atmosphere works that will result in more accurate and longer-range weather predictions. Radar, radio telescopes, manned and unmanned balloons, laboratory and mathematical models of atmospheric conditions, and earth-circling satellites will each add to the new knowledge, the experts suggested.

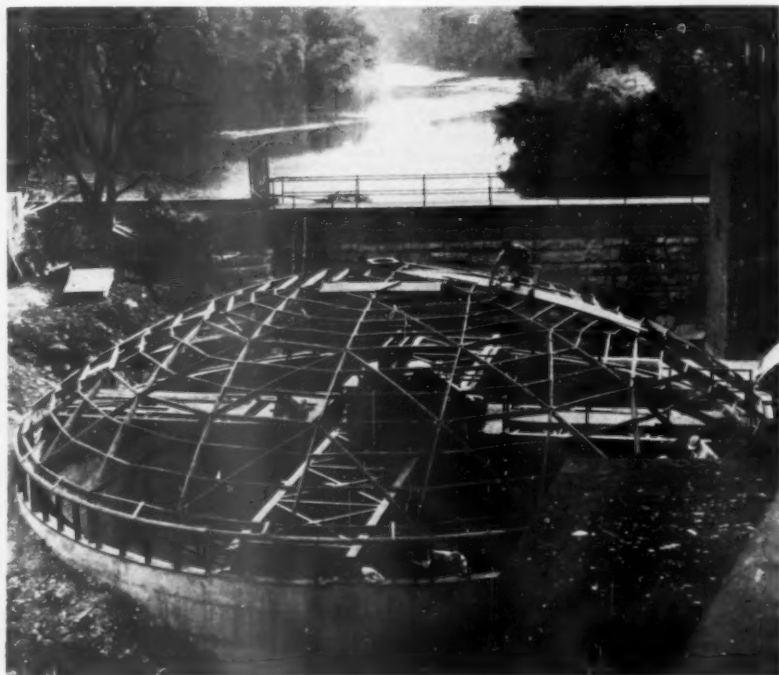
The meteorologists discussed how the "winds" change from surface-like motions to electronic fields acting in combination with the earth's magnetic field some 60 to 100 miles up.

Dr. H. H. Booker of Cornell University, Ithaca, N. Y., reported some motions of electromagnetic origin sometimes reach 37 miles per second at altitudes of 90 miles.

He said the evidence of movements in the ionosphere comes from observations of long-lasting visual meteor trails, noctilucent clouds, radar echoes from meteor trails, drift over the earth's surface of fading patterns associated with radio waves reflected from an ionospheric layer, and cosmic radio waves arriving from discrete extra-terrestrial sources.

Dr. J. S. Greenhow of the University of Manchester's Jodrell Bank Experimental Station, Cheshire, England, reported that observations using the 250-foot radio telescope had shown regular prevailing and tidal wind components in the high atmosphere. There are also large-scale irregular motions, he said.

Science News Letter, January 30, 1960



**FILTER TANK**—Each 24 hours chemicals in this filter can remove radioactive particles from 1,000,000 gallons of water drawn from the Black River. The water is used in the manufacture of special papers by Knowlton Brothers, Watertown, N. Y., for packaging photosensitive materials. Even the smallest amounts of radioactivity in the paper could result in defects in the films.

# SCIENTIA INTERNATIONAL

## NOVAS DEL MENSE IN INTERLINGUA

**Alimentos.**—Caffe, quando torrefacite a nigro, contine un alte concentration de niacina, que es un importante vitamina del complexo B. Tres a quatro tassas de caffe (ex granos fortemente torrefacite) satisfac le complete requirimento diurne de niacina de un adulto normal. Caffe brun (que es minus fortemente torrefacite) contine multo minus niacina, solmente circa un tertio de illo continite in caffe torrefacite a nigro. Niacina preveni pellagra. Le extense uso de caffe es possibilemente le causa del disparition de pellagra in grande partes del mundo. Iste observationes es reportate per un gruppo de scientistas del Universitate Tulane a Nove Orleans.

**Ichthyologia.**—In general, le typos de pisces trovate al costas de Sud- e Nord-America in le Oceano Pacific differe completamente ab illos incontrate al costas de Asia in le Oceano Indian. Isto non vale pro certe species extraordinari que occorre indifferenter in ambe regiones. Dr. Carl L. Hubbs del Universitate California propone, como explication de iste estranie facto, le possibilitate que ille pisces migra in le forte corrente submarin west-east que depost su disponerta in 1954 es cognoscite como le corrente Cromwell e que, secundo plus recente investigationes, pare coprer le integre distantia inter le duo continentes.

**Zoologia.**—Decem-cinque distincte species o racias de tortuca existe in le varie Insulas Galapagos. (Le traduction espaniol de tortuca es "galapago".) Cinque de illos occorre in Albemarle que ha cinque vulcanos e probablemente representa un coagulo vulcanic de cinque insulas separate. Le differentias interinsular del racias de tortuca e de altere elementos del fauna in le Insulas Galapagos suggeriva a Charles Darwin le principios general de su theoria de evolution per selection natural, sed illos es interessante per se e merita esser protecte contra le effectos annihilatori del civilisation moderne. Pro iste objectivo, un Fundation Charles Darwin pro le Insulas Galapagos esseva recentemente instituite a Brussel in Belgica. Illo ha jam equipate un prime expedition que ha le collaboration del governmento de Ecuador e de varie organisationes philanthropic.

**Recercas de Cancere.**—Un del studios in le reporto bi-annual del Instituto Sloan-Kettering pro Recercas Cancerologic concerne le observation que implantas de un cancre specific in muses—i.e. le tumor cognoscite como sarcoma 180—es completamente curabile per le vaccino BCG (baccillo Calmette-Guerin) que es in uso commun pro stimular le resistentia natural de infantes contra tuberculose. Le methodo ha essite usate usque nunc solmente in muses e solmente contra implantas de cancre. On experimenta currentemente con le methodo in casos de cancre spontanee in muses. Ab hic usque al tractamento de cancre in humanos il ha ancora un grande distantia. Sed le observation prova de novo que il existe un resistentia natural del corpore contra tumores maligne e que iste resistentia pote esser stimulate.

**Statistica Vital.**—Decem-cinque milliones del citanos del States Unite ha plus que 65 annos de etate. In 1950, iste cifra esseva decem-duo milliones. In le futuro, illo va continuar crescer. Tal disveloppamentos ha un profunde importantia pro le stato sanitari del nation. Si per exemplo in le anno typic de 1956, 4.2 pro cento del citanos de plus que 65 annos de etate e solmente 0.16 pro cento del citanos de minus que 65 annos de etate moriva de

morbos del corde e del circulation, on debe expectar un accrescimento continue del incidentia e del mortalitate in le morbos cardiovascular e evidentemente etiam in le altere morbos que es typic de etates avanzate. Le cifras absolute pro le mortes cardiovascular in 1956 esseva 609 milles in subjectos de plus que 65 annos e 245 milles in le alteres.

**Astronautica.**—Micrometeoros non pare representar un grave periculo pro le astronauta futur. Le satellite statunitense Explorer VII, in orbita depost le 13 de octobree 1959, ha reportate usque nunc solmente un "microcollision", e isto es esseva probabilemente non causate per un micrometeorito sed per un fragmento del rochetta del satellite mesme.

**Archeologia.**—Le datation del origine de artefactos ceramic e de productos natural mineral es nunc possibile con alte grados de accuratia usque a etates de circa cento milles annos gratias al novemente disveloppate "methodo thermoluminescential" que va supplementar felicemente le jam provate methodo a carbon-14. Le principio del nove methodo es que le disintegration radioactive (que occorre in omne substantia) resulta in le intrappamento de electrones e que istos pote esser liberate per le application de calor. Le quantitate del electrones presente in un objecto particular cresce con su etate. Quando le objecto sub investigation es calefacite, illo reage per un levissime luminescentia que es manifeste a temperaturas multo infra illos requirite pro inducer le objecto a incandescer. Un sensibilissime photomultiplicator es usate pro mesurar ille luminescentia que revela per su intensitate le numero del electrones liberate e assi le etate del objecto. Le methodo ha essite testate a bon successo in le datation de specimens de lava de etate satis exactemente cognoscite.

**Morbos Psychosomatic.**—Al minus 20 pro cento de omne le patientes vidite per le medico de practica general suffre de morbos puramente psychosomatic, e al minus 30 pro cento additional ha morbos que es severamente aggravate per factores psychosomatic. Isto es le conclusion de Dr. L. F. Hobbs de Alexandria in Virginia qui reporta remarcabile successos effectuate in tal casos con le uso del nove droga anti-depressori, phenelzina, commercialmente disponibile sub le nomine de Nardil.

**Inventiones.**—Esseva inventate un arco de violino que es movite electricamente. De facto, il non es le arco mesme que es movite sed solmente su pilos. Istos es combinate in duo bandas sin fin que curra in direction contrari, a rapiditates delicatamente adjustable per medio de un pedal.

**Sexologia.**—Super le base del mesuration de specific aspectos del morphologia externe del corpore human, Dr. C. C. Seltzer del Universitate Harvard ha elaborate un systema que permette le determination del grado de masculinitate que es characteristic de un individuo particular. Post 15 annos de applicationes de su systema, Dr. Seltzer ha constatate un remarcabile correlation positive inter basse grados de masculinitate e le uso de tabaco. Isto, in le opinion de Dr. Seltzer, subleva le question de si o non il existe un correlation inter le grado de masculinitate physic e le susceptibilitate del subjecto de contraher certe morbos. Si le responsa es affirmative, il seque que un morbo particular—per exemplo cancre pulmonar—pote predominar in fumatores sin esser directe-c primariamente causate per le habitude del fumar mesme.

Science News Letter, January 30, 1960

### GENERAL SCIENCE

## Reading Interlingua

YOU CAN READ Interlingua if you had no more than one semester of high school French or Spanish or Latin and flunked it. You can read and understand a great deal of it even if you had never had contact with any foreign language.

Send this page to an acquaintance abroad and tell him that he can get additional information about Interlingua from Alexander Gode, SCIENCE SERVICE's Interlingua Division, 80 E. 11th St., New York 3, N. Y.

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## GENERAL SCIENCE

# Research Budget Up

The Federal Government's 1961 fiscal year budget includes increases in the estimated funds for space research, as well as increases in other non-military fields of research.

SPACE RESEARCH is high on the President's annual budget message—virtually twice as much money has been allocated to the National Aeronautics and Space Administration (NASA) this year as compared with fiscal 1960—as the United States attempts to meet the Russian challenge and still balance the budget.

Coming under the category of "expenditures for other than major national security," NASA programs will account for 41% of these funds which total \$1,461 million. (In contrast, 26% is for programs of the Department of Health, Education and Welfare, especially for the medical research activities of the United States Public Health Service.)

The \$503,000,000 of the estimated 1961 budget for NASA will provide for increased and improved facilities for carrying out the nation's "intensive program of scientific exploration" and for moving ahead vigorously with the development of large boosters essential to the conquest of outer space.

The National Science Foundation is another Federal agency that will be spending non-military millions. Its estimated budget of \$101 million is close to twice what was actually spent in fiscal 1959. In addition to direct support of research, NSF is responsible for recommending to President Eisenhower policies relating to the role of the Federal Government in the encouragement, support and conduct of research and education in the sciences.

Pointing to the fact that the Federal Government supports well over half the entire research and development of the nation, President Eisenhower stressed the following highlights in his budget message:

A record total of expenditures, \$1.2 billion, for water resources projects under the Corps of Engineers and the Bureau of Reclamation. In addition to funds for going work, this amount provides for the initiation of 42 new high-priority projects, which will require \$38 million in new appropriations for 1961, and will cost a total of \$496 million over a period of years.

New appropriations for the military functions of the Department of Defense amounting to \$40.6 billion and expenditures of \$41 billion. Actually four-fifths of the Federal Government's expenditures for research and development are directed at national security. The total for this is estimated at \$6,930 million in 1961. While defense makes up 70% of 1961 budget, research and development for the Atomic Energy Commission takes 13%. Much of this AEC research, the President said, contributes to the civilian economy and to improvements in the health, welfare and

technological advancement of the nation as a whole.

Highlighting some other non-military areas, research funds are proposed for the following:

1. Department of Health, Education and Welfare: expenditures for a new program of research and demonstration projects in social security relating to making the needy more self-sufficient, to the causes of dependency and to other concerns of the program. Estimated budget for 1961 is \$374.6 million, compared with \$250.6 million actually spent in fiscal 1959.

2. Department of Agriculture: increased expenditures for research on pesticide residues and on utilization and basic research. Estimated budget for 1961 is \$138.2 million, compared with \$122.0 million actually spent in fiscal 1959.

Science News Letter, January 30, 1960

## ENGINEERING

## Tape Records Color

A REVOLUTIONARY recording system, a cross between photography and magnetic tape, has been developed.

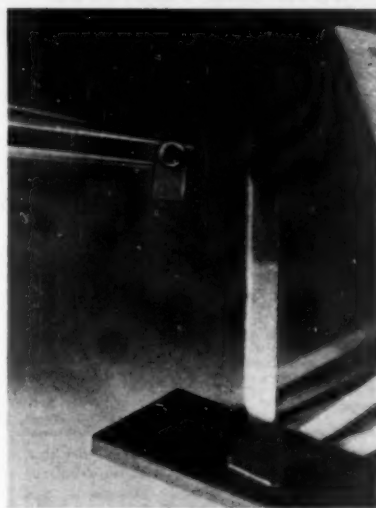
It records pictures in black and white or in color on what resembles 16 millimeter motion picture film. However, it requires no developing. It is ready for instant playback.

Invented by Dr. William E. Glenn, General Electric Research Laboratory physicist in Schenectady, N. Y., the new process is called "thermoplastic recording," or TPR for short.

The basis of the system is a coating on the film that readily melts when heated. In recording, a fine beam of electrons bombards this coating and deposits varying charges of electricity. The coating is heated until plastic so that electrostatic forces created by the charges wrinkle the molten surface. Then the wrinkled surface is allowed to harden. This is the record. The whole process takes less than a hundredth of a second.

Although the film is a standard 16-millimeter width, the recording track is only five millimeters wide. The film runs at ten inches a second—a little faster than the standard 7.5 inches a second speed for home tape recorders. But Dr. Glenn said recordings "with full resolution" at half this picture size have been made with the film running five inches a second.

To play back the recording, special light bulbs are used that throw out lines of light instead of a mass of light as does a con-



**TUNNEL DIODE**—This device, no larger than the head of a match, controls the flow of electrons in an electric current. Made by Radio Corporation of America, Somerville, N. J., the tunnel diode may be useful in computers, satellites and space vehicles.

ventional light bulb. In front of the projection lens is a set of metal bars. These intercept the lines of light projected by the lens. When the thermoplastic film is projected, however, its tiny wrinkles diffract the lines of light. The diffracted light misses the metal bars and forms an image on the screen.

To record in color, a second signal is fed into the recorder and a special optical system is used in the projection.

Erasing is accomplished by heating the film to a higher temperature than during recording to soften the coating again and to allow the imprisoned electric charge deposited by the electron beam to escape.

One apparent drawback is that the recording must be made in a high vacuum, necessitating a vacuum pump. This may be offset, however, by TPR's ability to store huge amounts of information. All 24 volumes of a well-known encyclopedia could be recorded on a reel the size of a spool of thread. If the pages could be turned fast enough, the recording could be made in 24 minutes.

TPR is still considered to be in a developmental phase. Whether it will challenge film and tape will depend on its ultimate performance and cost. In addition to promising usefulness in the TV industry, the process may find applications in radar, radar-jamming or countermeasures, sonar and infrared displays, missile guidance, space vehicles, and aerial reconnaissance.

Science News Letter, January 30, 1960

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#### ASTRONAUTICS

## Men Live in Space Home

TWO MEN will soon take up housekeep-  
ing in the world's tiniest efficiency apart-  
ment—a cabin that closely resembles the  
capsule that will house future space crews.

The two men will eventually be able  
to stay within the eight-by-12-foot cabin  
for periods up to 30 days, Dr. Billy E.  
Welch of the School of Aviation Medicine,  
Brooks Air Force Base, Texas, told scien-  
tists attending lectures in space medicine.

The exact date for the first 30-day run  
has not yet been chosen, due to flaws  
that have snarled smooth operation of the  
cabin apartment. Nevertheless, many of  
the creature comforts of home will be  
aboard when the men finally say good-by  
to the outside world for their 30-day stay.

There is one seven-foot bed, with a two-  
inch foam rubber mattress, built into the  
side of the cabin. There is also one chair  
in front of the instrument panel. The  
two-man crew will have a coffee pot and  
small oven.

The simulated space compartment will  
carry a 30-day supply of food, which may  
include irradiated or dehydrated food as  
well as some canned portions. The men  
will have 22½ gallons of water in the  
cabin, plus a system that will recycle all  
liquids to replenish the water supply, Dr.  
Welch said.

Only one-man cabins have been tested  
previously, and the time record is prob-

ably held by a Strategic Air Command  
pilot who remained in a cabin eight days.  
The first men to be chosen for the two-  
man experiment will be cabin technicians,  
the chief of the space ecology department  
said.

They will be watched 24 hours a day  
through one-way windows, and television  
screens. The "passengers" will be allowed  
to communicate to the outside, but they  
will receive no responses from the men  
on guard.

They will wear ordinary clothes, and  
will be allowed to smoke. The men may  
read books they bring aboard or listen  
to music, individually chosen before the  
trip. They may have to listen to the  
music with earphones since both men will  
not always enjoy the same music at the  
same time. Very likely one will have  
duties to perform that might be impaired  
by such distraction, Dr. Welch said.

Every effort will be made to simulate  
the isolation of space. Even atmospheric  
noises and disturbances will be superim-  
posed on the men's radio circuit.

The new cabin, built by Minneapolis-  
Honeywell's aeronautical division plant in  
Minneapolis, is an improvement over the  
school's one-man simulator in which Air-  
man First Class Donald C. Farrell made  
a seven-day "moon trip" last year.

Science News Letter, January 30, 1960

#### SURGERY

## Heart Massage Succeeds

A BRITISH doctor's quick action in start-  
ing heart massage is credited with saving  
the life of a patient who had "died" of a  
coronary thrombosis.

The patient is alive and well, some nine  
months later.

Heart massage is now a common and  
successful technique performed when the  
heart stops during and immediately after  
anesthesia. However, Dr. R. S. Walton of  
Preston, Lancashire, reports in *British Medi-  
cal Journal* (Jan. 16) "there is no record  
in this country of complete cardiac asystole  
from coronary thrombosis being resuscitated  
with uneventful recovery and well-being."

(Asystole is an incomplete or imperfect  
systole—the contraction of the heart's ven-  
tricles by which the blood is driven into  
the aorta and pulmonary arteries.)

Time is the important factor in attempts  
to revive a person with a stopped heart  
following a coronary thrombosis, Dr. Wal-  
ton warns. If there is a question as to  
diagnosis or if suitable equipment is not  
available, an incision should be made in  
the chest wall. No bleeding points to  
asystole and heart massage can be tried.  
If there is bleeding, Dr. Walton explains,  
the patient's heart muscle is "most cer-  
tainly" fibrillating, or contracting irregu-  
larly, and the physician may have time to  
wait and try the effects of electrical or  
chemical agents to restore normal heart  
action.

The irregular heart muscle contractions  
—ventricular fibrillation—that followed the  
successful heart massage were stopped by  
administering procaine hydrochloride, which  
restored normal rhythms. Procaine is  
known to reduce the irritability of the  
heart muscle, Dr. Walton reports, but this  
appears to be the first such record of its use.

Science News Letter, January 30, 1960

## Questions

ENGINEERING—What is the basis of the sys-  
tem "TPR"? p. 69.

METEOROLOGY—What is the Bermuda High?  
p. 67.

NATURAL RESOURCES—How many maps did  
the Geological Survey prepare during 1959?  
p. 72.

PUBLIC HEALTH—What seven flavoring sub-  
stances have not been entirely cleared as far  
as being safe for human consumption is con-  
cerned? p. 66.

Photographs: Cover, Bell Aircraft Corporation;  
p. 67, Knowlton Brothers; p. 69, Radio Cor-  
poration of America; p. 71, United States  
Rubber Company; p. 74, U.S. Department of  
Commerce; p. 80, George F. Cram Co., Inc.

## ENGINEERING

# Radar Sees Over Horizon

RADAR STATIONS in London and New York may some day watch each commercial airliner every minute as it flies.

Should trouble develop and the plane crash, rescue craft could be dispatched promptly and told almost exactly where to look even if the pilot was unable to radio his position in a distress broadcast.

This is one possible future application of an experimental radar now undergoing tests at the Naval Research Laboratory in Washington, D. C.

The new radar was conceived by Dr. Robert M. Page, director of the laboratory. Unlike conventional radars, the radar is able to see beyond the horizon by bouncing its electric beam off the ionosphere, found 50 to 150 miles above the earth.

Known as Project Madre, the experimental radar already has detected from Washington unidentified moving objects in the vicinity of Cape Canaveral, Fla., during periods of rocket launchings, Dr. Page said. A full-fledged experimental installation is now under construction near Chesapeake Beach, Md. When completed this fall, its antenna, measuring 330 feet long and 150 feet high, will shoot 180 pulses of radar waves a second over the Atlantic at a peak power of 5,000 kilowatts.

Dr. Page said he hopes the radar, which has been proved in principle, will indeed be able to detect "a large plane" at distances varying from 500 to 2,600 miles. The actual range of the radar is unknown. The distance covered by the beam itself will vary between 500 and 1,000 miles. But whether the ground surveyed by the radar

beam is near or far depends upon the height of the ionosphere.

The purpose of the Chesapeake Bay installation is to prove that the radar will work as well as the experimental evidence now indicates, Dr. Page said.

"We think it can see a large airplane. We hope it can see smaller targets. It would be wonderful if it could see a missile," he said. But he doubted that it would see a missile at 2,600 miles because "only a small warhead would be coming at you."

To operate in a frequency range of three to 30 megacycles per second, the radar would not have been possible ten years ago because electronic equipment lacked the sensitivity and power now available.

Also, ten years ago there was no means for comparing a received radar "echo" with the pulse that had been sent out. This is Madre's secret. The jumble of radio waves received is carefully compared electronically with the pulse that was sent out. If a similar signal is detected in the jumble, a target has been hit by the beam.

By comparing the amplitude of the received signal, a distance can be obtained. By comparing the phase shift of the received signal, an extremely exact measurement can be made on the speed at which the target is approaching or moving away from the radar transmitter.

Dr. Page termed "interesting" speculation that Madre radar some day might be shrunk in size so that airplanes might be able to "see" deeply into other countries.

Right now, he said, there is some conjecture as to whether the present equipment

could be installed on a battleship. But he held out the possibility that some day someone might learn how to shrink the equipment to get it on a jeep.

Science News Letter, January 30, 1960

## ROCKETS AND MISSILES

## Rocket Ignition System Foils Accidental Shoots

A BETTER ignition system for missile rockets has been developed. It prevents stray radio waves from accidentally blasting a missile into the wild blue yonder.

The "exploding bridgewire system" uses a small wire to ignite rocket fuel. To set off the rocket, a heavy charge of electricity is shot into the wire, causing it to explode. This charge is much heavier than would be received if a high-powered radar beam accidentally played upon the missile.

The EBW System, as it is called, was reported by Librascope, Incorporated, of Sunnyvale, Calif., a subsidiary of General Precision Equipment Corporation. The system is said to be useful also in separating rocket stages, in stopping rocket thrust and in destroying missiles upon command, providing at the same time "unequalled safety and reliability" along with weight and space savings.

Science News Letter, January 30, 1960

## TECHNOLOGY

## New Rubber Paint Speeds Submarines

A RUBBER paint has been developed that will give submarines a more-yielding "skin" and may enable ordinary submarines to slip through the water at speeds approaching 70 miles an hour.

Further perfection of the paint, plus coming engine improvements, might lead to passenger and cargo submarines that could race across the oceans at 207 miles an hour.

Developed by Dr. Max O. Kramer, vice president of Coleman-Kramer, Inc., Los Angeles, the new rubber paint cuts down water turbulence around a body moving through the water.

United States Rubber Company scientists, working with Dr. Kramer, compared the ship paint to the pneumatic tire that advanced land transportation.

The present paint consists of a thin layer of rubber supported on the boat's surface by "a multitude" of tiny rubber pillars. A freely flowing viscous liquid is able to flow through the tiny caverns created by the rubber pillars and enclosed by the outside rubber coat. These caverns give the coating flexibility, and the supple liquid provides the necessary damping to suppress turbulence.

In tests with submerged bodies, the coating has cut water resistance, due to turbulence, in half. But scientists hope to improve the rubber paint further, because most ships use 70% to 90% of their propulsive effort to overcome this drag. By reducing turbulence, more engine power can be used to speed the vessel.

Science News Letter, January 30, 1960



**RUBBER COATING**—Absorption of energy in Lamiflo rubber coating is measured by Dr. Fitzbush W. Boggs, head of the team doing research at the United States Rubber Company on drag reduction in motorboats and submarines. The tiny pillars on the rubber coating help eliminate some of the turbulence normally created in water by boats.



## NUTRITION

**Peanut Oil Causes Mutations in Wheat**

INVESTIGATING peanut oil as a cancer-causing agent might be worthwhile, two Indian scientists have suggested.

Peanut oil caused many mutations in wheat seed that had been soaked in it for 24 hours, report M. S. Swaminathan and A. T. Natarajan of the Indian Agricultural Research Institute, New Delhi. Since there is believed to be a relationship between mutation-causing agents and cancer-causing agents, they say, it may be worthwhile pursuing the oil's effect on genes and chromosomes from the point of view of cancer and its cause.

"The role of nutrition with reference to the incidence of cancer is now widely realized and there are indications that a search for carcinogenic compounds in human dietary regimens might be worthwhile. Peanut and mustard oils are widely used as cooking media in tropical countries," the scientists point out.

Details of their study appear in *Journal of Heredity* (Vol. 50, No. 1, 1959). They soaked Einkorn, emmer and 'read wheats in peanut, mustard and castor oils. The seeds were sown in the field or germinated in the laboratory in petri dishes. In both bread wheat and Einkorn, the peanut oil caused the greatest reduction in germination. Fertility was also reduced in the bread wheat. Some of the mutations produced may be of economic value, the scientists say.

Science News Letter, January 30, 1960

## OCEANOGRAPHY

**Undersea Mountain Rises Higher Than Mt. Whitney**

A HUGE UNDERSEA mountain, higher than California's Mt. Whitney, has been discovered in the South Atlantic.

The formation, termed a seamount by geologists, rises 15,980 feet from the ocean floor. Its platform top is 210 feet below the surface of the ocean, with one isolated knob rising to within 120 feet of the surface.

•Discovered by Columbia University scientists aboard the university research vessel Vema about 550 miles west of the Cape of Good Hope, South Africa, the cone-shaped seamount is some 35 miles across at the base and five miles across at the top.

Columbia geologists said the formation probably existed as an island, protruding well above the surface, during the last glacial period 8,000 to 10,000 years ago. After that period, melting ice changed the world-wide sea level and the waters of the Atlantic rose about 180 to 240 feet, submerging the island.

As most seamounts, this one is associated with a large anomaly in the earth's magnetic field, indicating it is composed of highly magnetic volcanic rock.

Rounded cobbles of lime about the size of large eggs and baseballs were dredged from the crest of the formation, as well

as coral and mollusk shells. The shells indicate some animals live on the top of the cone. No biological trawls were made from the Vema.

A blanket of manganese-coated sand and gravel was spread around the base of the seamount at 15,600 feet.

The discovery was made while the Vema, now on a ten-month scientific cruise that will include circumnavigation of the Antarctic continent, was enroute from Recife, Brazil, to the Cape of Good Hope.

Previously unknown to mariners, the seamount could have proved a menace to mariners, scientists said. A submarine with its sonar not in operation could possibly have rammed the formation before being aware of its existence.

Science News Letter, January 30, 1960

## NATURAL RESOURCES

**Interior Department Shows Successes, Needs**

THE UNITED STATES will need its best thinking and planning in the years just ahead to meet the impact of population pressures on the nation's natural resources, Secretary of the Interior Fred A. Seaton said in Washington, D. C.

The past year's successes, ranging from bird conservation to bituminous coal mining, and the future years' needs were highlighted in the Department's annual report.

Some of the Interior Department's activities in fiscal 1959 included: work on the construction of five saline and brackish water conversion demonstration plants; reclamation projects for water and electricity in arid western areas; planned urban and suburban development; seeding and reforesting unproductive lands; exploring oil, gas, coal and nuclear fuel resources and conserving helium; and maintaining and improving recreation resources.

The turn-over from Federal to state control of Alaska's fisheries and wildlife was one of four pieces of major legislation affecting the Department's Fish and Wildlife Service in 1959. More funds for research on effects of pesticide chemicals on fish and wildlife and for migratory bird refuges—through a dollar increase in the duck stamp price—were also made available.

The Geological Survey, which celebrated its 80th anniversary in March, 1959, prepared a total of 2,439 maps, of which more than 1,600 constituted new mapping. Studies were directed toward the discovery of concealed ore deposits, while airborne radioactivity and magnetic surveys provided new information about large areas of the U. S.

Safety devices were developed for coal miners by the Bureau of Mines. "An ambitious study" was begun to determine if hydraulic methods can be used to mine bituminous coal in the U. S. Another new project is directed at finding techniques for removing explosive methane gas from coal seams in advance of mining. A fifth Government helium plant neared completion. Improved and more efficient mining and metallurgy techniques were among the Bureau's 1959 achievements.

Science News Letter, January 30, 1960

**IN SCIENCE**

## MEDICINE

**Death Rates Related To Marital Status**

A WOMAN'S marital status apparently is closely related to the age at which she might be expected to die.

Young to middle-aged women, ages 20 to 45, who fall in the "ever-married" category that includes married, divorced or widowed women have lower death rates from most causes than do single women. Medical selection appears an important factor at the younger ages, Julia B. Zolotar of Yale University's department of public health reports in the *Journal of Chronic Diseases* (Vol. 11, No. 1, Jan.).

After age 45, however, there is a large group of circulatory system diseases, along with diabetes and cirrhosis of the liver, to which ever-married women seem more susceptible. Possible environmental factors that could be adversely affecting this group should be studied, the researcher suggests.

Analysis of deaths by cause also showed some diseases are much more highly selected out by marriage than others. For influenza and pneumonia, tuberculosis and diabetes, single women have at age 30 more than twice the rate of the ever-married group. Accidents and cancer show relatively little difference at this age, however.

In conclusion the study indicates that the "environment of single women is not necessarily unfavorable in comparison to that of ever-married women."

Science News Letter, January 30, 1960

## VETERINARY MEDICINE

**Virus Causes Cattle Disease**

A VIRUS much like the one found in children with respiratory diseases is at least partly responsible for "shipping fever," a costly cattle disease.

Described as a major breakthrough in researchers' understanding of the disease, identification of the virus means a start can be made towards producing an effective vaccine.

Veterinarians at the U. S. Department of Agriculture's research center, Beltsville, Md., have isolated para-influenza 3 virus from the nasal mucus of calves showing signs of shipping fever. Mild cases of the disease were then produced in healthy animals by spraying this virus into their noses. The virus was also grown in tissue culture and anti-serum produced.

It appears, however, that many infectious agents may be responsible for this widespread respiratory disease of cattle, Dr. Robert C. Reisinger said. Much more will have to be learned about this disease complex before an effective vaccine is produced.

Science News Letter, January 30, 1960



# NE FIELDS

## DYNAMICS

### Convert Heat Directly To 100 kc Electricity

HEAT HAS BEEN converted directly into 100-kilocycle alternating current electricity in significant amounts without rotating machinery or a DC-AC converter.

Scientists at General Atomic Division's John Jay Hopkins Laboratory for Pure and Applied Science, San Diego, Calif., used a high temperature cesium cell converter to produce enough alternating current to light a series of small light bulbs.

An outgrowth of thermoelectric research, the discovery brightens prospects that direct conversion equipment, including the cesium cell, may eventually be used in future power plants instead of steam boilers, turbines and generators. Such equipment might even help power companies cut costs.

The cesium cell is based on the Edison effect. During early experiments on the light bulb, Edison found that a white hot metal boils electrons out of its surface. This was the founding idea of all radio tubes in which electrons are boiled off hot wires and collected by an adjacent plate within the tube.

In the cesium cell, a metal plate is heated white hot. Electrons boiled out of the hot plate, or emitter, are collected on an adjacent cold plate called a collector. The hot and cold plates act as the poles of a battery, delivering current to electric wires for distribution. Part of the heat put into the hot plate is converted directly into electric current.

A small amount of cesium metal vapor added to the cell helps in the direct conversion process by stepping up the rate at which the electrons boil off the hot surface, by reducing the energy loss at the cold surface and by creating an ionized gas or plasma which neutralizes the electron space charge in the region between the hot and cold surfaces. This causes the current to pass much more readily through the region.

Science News Letter, January 30, 1960

## PHARMACOLOGY

### Tranquilizers Cost Us \$280,000,000 Each Year

AMERICANS spend approximately \$280,000,000 annually on tranquilizers.

This figure is estimated from data supplied by the Kefauver Antitrust and Monopoly Subcommittee, investigating the pricing practices of leading manufacturers of tranquilizers.

Sen. Estes Kefauver (D-Tenn.) reported that tranquilizers constitute a major branch of the drug industry. Manufacturers sell their tension-relieving pills to druggists for \$200,000,000 annually. Druggists mark prices up an average of 40%, the Senator estimated.

The price of one tranquilizer varied from

\$4.25 to \$5.50 for 50 pills among five drug-stores in one major city.

Only those pills that are big sellers will be investigated. They include Miltown, Equanil, Compazine, Thorazine, Sparine, Serpasil and other brands of reserpine. There are more than 60 other brands of various types of relaxing agents now on drugstore shelves.

Sen. Kefauver emphasized that the major interest of the Subcommittee is a factual determination of whether or not the major drug manufacturing companies are competitive and price drugs accordingly. The Subcommittee also is interested in what part, if any, the use of patents and licenses has played in the pricing structure within the drug industry, and a determination of whether or not new legislation is needed to protect consumer interest in the vital area of health.

Officials from Smith, Kline and French Laboratories, Philadelphia, Carter Products, Inc., New York City, American Home Products Corp., Philadelphia, and Ciba Pharmaceutical Products, Inc., Summit, N. J., were requested to testify before the Subcommittee.

Tranquilizing drugs have assumed an important role in our present day society. Their use is not limited to patients in mental hospitals or those with recognized mental disorders under treatment at home. They are prescribed and used by large segments of our population living ordinary lives but suffering from anxiety, tension and emotional disorders, the Senator said.

Science News Letter, January 30, 1960

## PHYSICS

### Plasma-Jet May Propel Manned Vehicle To Space

See Front Cover

THE EXPERIMENTAL plasma-jet generator is at the present time being used only for the testing of materials for space vehicles, but it is conceivable that a propulsion system using the plasma jet could propel a manned space vehicle on an interplanetary flight at speeds close to that of light.

Such a propulsion system would probably use atomic power or the heat from the sun as a source of electrical energy to create the plasma. Plasma, called the fourth state of matter, is a mixture of gas and electrically charged particles at high temperatures.

The plasma-jet generator, seen on the cover of this week's SCIENCE NEWS LETTER, uses a high intensity electric arc to produce temperatures up to 18,000 degrees Fahrenheit. The arc separates the molecules in gases, such as nitrogen or argon, and forces the charged gas particles through a small nozzle. The gas particles recombine and produce the high temperatures.

The plasma jet has been developed by the Bell Aircraft Corporation's laboratories in Buffalo, N. Y. With additional equipment, it could produce temperatures up to 40,000 degrees Fahrenheit.

Science News Letter, January 30, 1960

## ZOOLOGY

### Living Fluorescent Corals Flown to Antwerp Zoo

A RARE collection of living, fluorescent corals, transported 12,500 miles by plane, can now be seen in the Antwerp zoo. It is one of two such exhibits open to the public.

The tiny deep-sea dwellers were taken from their tropical home in the reefs off the coast of New Caledonia, French territorial island in the South Pacific. Divers, who collected the specimens from depths of 100 feet or below, worked under the direction of Dr. Rene Catala, founder, owner, and director of the Aquarium and Marine Biology Station at Noumea, New Caledonia.

Transfer of four cases of the corals was made by special flight arrangements with TAI (Transports Aeriens Internationaux) from Noumea to Brussels via Paris, then to the zoo by truck. Dr. Catala accompanied the shipment and cared for the animals.

When ultraviolet light is directed into the especially prepared fishpond where the corals live, fluorescent colors transform the ordinary-looking corals into glowing underwater jewels.

The collection was taken to the Belgian zoo under the auspices of the Royal Society of Zoology of Antwerp, with the cooperation of geologist Dr. Haroun Tazieff.

Dr. Catala is the first to transport living corals over a long distance and set up a popular exhibit of this kind. He also discovered their fluorescent qualities.

Exposure to ultraviolet light is expected to shorten the life of the corals considerably. The skeleton left after the animal dies is not fluorescent.

Science News Letter, January 30, 1960

## AERONAUTICS

### Jetting Around World In 54 Hours Scheduled

IN THE NEAR future it will be possible to fly around the world on commercial transports in a scheduled 54 hours, San Francisco to San Francisco, thanks to the coming of 100% pure jet operation on the globe circling routes.

This day-by-day possibility does not quite equal the present record set in December, 1959, by Milton Reynolds, ball point pen manufacturer of San Francisco. This was 51 hours 45 minutes 22 seconds, some nine hours less than a circling made by two Japanese writers. Tail winds aided the Reynolds flight and Pan-American jets flying the polar route from San Francisco to London were an important factor.

On Feb. 8 Pan American World Airways will have jets to link up with the polar flight that will circle the world back to the West coast, and a present ten to 12 hours delay in the schedule at Tokyo will be plugged. Then new record times of 54 hours will be a schedule possibility, contrasted with Jules Verne's 80 days.

Science News Letter, January 30, 1960

## VITAL STATISTICS

# The Big 1960 Man Hunt

Census time has come again and a record number of Americans will be hunted down and asked a selection of personal questions. Here is what to expect about April 1.

By ALLEN LONG

THE BIGGEST man hunt of the century will get under way about April 1.

Approximately 160,000 census takers will start tracking down 180,000,000 Americans in their homes, apartments and rooming houses.

This is the year for the decennial census. Many questions have been prepared, but—good news—not as many as in some previous censuses. However, more people will be answering the detailed questions than in previous censuses.

The law requires you to answer all questions truthfully. Your answers cannot be used for purposes of taxation, investigation or regulation.

Your answers will be stamped "confidential." The census taker is sworn to secrecy under severe penalties. Information obtained in the census can be published only as figures in which no person can be identified.

Toward the end of March, the Bureau of the Census will mail out to every household a form that must be filled in before the census taker arrives. This is being done so that you can consult other members of your family for facts you may not know yourself.

## Questions for Americans

One question will ask you to name any visitors who stay overnight in your house on March 31 of this year. Another question will ask you to list all persons living in your house, giving their relationship to you, their sex, race (white, Negro, Hawaiian, part Hawaiian, Aleut, Eskimo, etc.), birth date and marital status. Another question will ask whether more than one family lives in the house and whether they eat with you.

Other questions touch upon your house—its cooking equipment, number of rooms, hot and cold water, toilets, bathtubs, ownership and value.

The census taker will call a few days later. He or she will show credentials. The census taker will transfer this prepared information to her forms.

Every fourth household will get a thorough interview. Many more questions will be asked, and a blue questionnaire will be left for the householder to fill out and mail back in a postage-paid envelope.

This will give the Bureau of the Census accurate, detailed information on 25% of the population. It will enable statisticians to draw a more accurate picture for all Americans.

Some of the detailed questions in the

1960 census that were not in the 1950 census include items on: Language spoken before coming to the U. S. (for foreign born U. S. residents), year moved into this house, attending public or private school, year when last worked, name of employer (not for publication), county and city where you work and means of transportation to work.

This is the first year that the question has been asked on how you get to work. Answers are expected to benefit the public by enabling transit companies to plan future service, and highway officials to analyze traffic patterns and evaluate new highway proposals. The figures also will help industries decide where to put new industrial parks.

Dropped from the 1950 census are questions attempting to identify persons of mixed Indian, Negro and white races; the 1950 attempt was unsuccessful, said Paul C. Glick of the Bureau of the Census. Citizenship will not be included either because there was little use made of this information from 1950 census data. A question on length of unemployment also

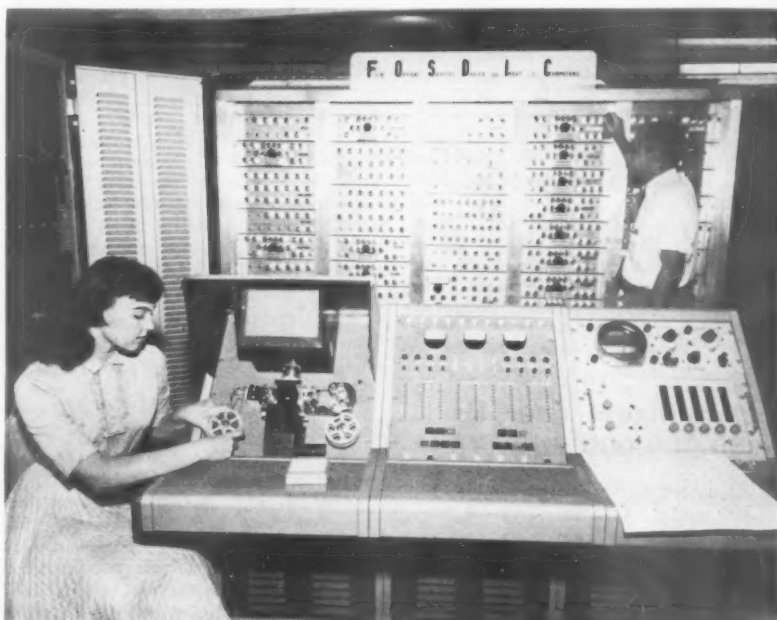
was dropped, but because 1950 results were unsatisfactory.

Of the scores of questions proposed by groups having a vital interest in the nature of the American people, several notable questions were considered and dropped. One such question was, "What is your religion?" Inclusion of this question was urged to fill a gap resulting from absence of a Census of Religious Bodies since the last one in 1936. But the proposal drew fire from individuals, newspapers and certain religious groups. It was decided that there could be so much resistance to this question that it could damage the rest of the census, so the proposal was rejected.

## Pre-testing Reveals Faults

Also rejected was a question on adult education. In pre-testing this question on a sample population, it was discovered that some forms of adult education are ill-defined. It would be difficult, if not impossible, to get reliable results without exploring the subject with a long string of questions.

For similar reasons, a decision also was made to exclude questions relating to how many jobs are held by each person. Some observers feel this will be one of the most significant omissions in the 1960 census.



**FOSDIC**—Five FOSDICs, or Film Optical Sensing Devices for Input to Computers, will do the work of 2,000 clerical workers in the 1960 census. The Bureau of the Census made the four copies of FOSDIC, originally developed by the National Bureau of Standards. Census documents are photographed on 16 mm microfilm since FOSDIC can read the film faster than it can the paper sheets themselves.

Reliable data in this area might confirm suspicions that a shocking number of Americans have to hold two or more jobs because of inflation.

In counting the 1960 population, census workers will use and amass more than 50,000,000 separate sheets of paper. These will be processed through 400 Census District Offices scattered throughout the country. Mechanical processing of the billions of facts reported will begin late in April at the Bureau's Census Operations Office at Jeffersonville, Ind.

Books turned in by census takers will be microfilmed so that each 14-by-16-inch worksheet will occupy a frame of microfilm about a square inch in area. It is expected that, at times, processing will run 24 hours a day and that all told about 50,000 rolls of microfilm—holding 950 miles of information—will be used.

The developed microfilm then will be shipped to the Bureau's main offices at Suitland, Md., to be run through FOSDIC, a Film Optical Sensing Device for Input to Computers. Five FOSDICs will handle the job, doing the work that otherwise would require 2,000 clerks.

As its name suggests, FOSDIC will "read" information on the microfilm and transfer it to magnetic tape. Meanwhile, computer experts will be working out programs for electronic machines. These machines will extract the various kinds of information wanted from the taped census data.

They may, for instance, be instructed to tabulate the number and racial characteristics of all the men in a given district.

The machine will produce its own magnetic tape containing this wanted information. This tape will then be run through a high speed printer that can turn out statistical tables at the rate of 600 lines a minute.

Final state population totals will be given to President Eisenhower late in November. He in turn will give them to Congress with a table for apportioning seats among the states in the House of Representatives, as required by the Constitution.

Out of the 1960 population census will come five series of publications:

1. Series P-A: State reports on number of inhabitants for various types of geographical areas.
2. Series P-B: State reports showing general demographic characteristics (data by sex and color, on age, household relationship and marital status).
3. Series P-C: State reports on general social and economic characteristics.
4. Series P-D: State reports on detailed population characteristics.
5. Series P-E: Special population reports showing characteristics for the U. S. and regions.

The first reports will be published in November of 1960. Most, however, will be published in 1961, and the last reports—those of Series P-E—will be published in 1962. The reports on housing will be published during this period also, but slightly behind the population reports.

Why take a census, especially when it will cost taxpayers an estimated \$120,000,-

(Continued on p. 78)

## 5X ACHROMATIC WATCHMAKER'S GLASS

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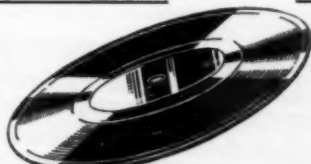
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Science News Letter, January 30, 1960

#### PUBLIC HEALTH

### Relation Seen Between Dog Distemper, Measles

HUMANS may be responsible for some outbreaks of distemper, a serious disease of dogs, and the canines may be equally responsible for some measles epidemics.

This is suggested by veterinarian Dr. J. W. Skaggs of the Kentucky State Department of Health. Both diseases cause similar symptoms: fever, cough, eye inflammation and, less frequently in dogs, a skin rash. In addition, the viruses that cause measles and distemper are closely related antigenically, Dr. Skaggs reports. in the *Journal of the American Veterinary Medical Association* (Vol 136, No. 1, Jan. 1).

It has already been shown that injecting a dog with the measles virus results in the animal's coming down with a "typical" case of distemper. There have been no reports that canine distemper virus will infect man, however.

There is some evidence, Dr. Skaggs said, that weakened canine distemper vaccine is an effective immunizing agent against human measles. Carefully controlled laboratory and field investigations are needed to determine whether chicken embryo-attenuated distemper vaccine is really effective and practical.

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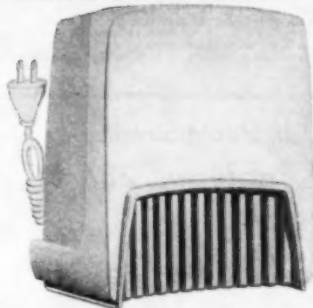
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The largest scientific *payloads* the U. S. has placed in orbit are the 90-pound Explorer VII and the 142-pound Explorer VI.

More than 95% of the world's *olive oil* is produced in the Mediterranean Basin.

Domestic use for *synthetic lubricants* made from fats is expected to increase to about 26,000,000 pounds in 1961.

Three new *national forests* have been established by Presidential proclamation: the Oconee in Georgia, the Tombigbee in Mississippi, and the Tuskegee in Alabama.

*Ferrokinesis*, the study of the dynamic metabolism of iron following intravenous injections of tracer doses, has been very useful in the study of many pathological states.

## 1960 Man Hunt

(Continued from p. 75)

000? The answer is easy. The law requires it so that proper state representation can be had in Congress. But aside from that basic reason, there are many uses of census figures that directly and indirectly benefit the public.

The Government is a heavy user of census figures. Congress uses census data to help determine what kinds of laws should be passed. Federal funds often are distributed to the states on a population basis—for instance, funds for the school-lunch program are apportioned partly on the basis of how many school children are in the state.

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Science News Letter, January 30, 1960

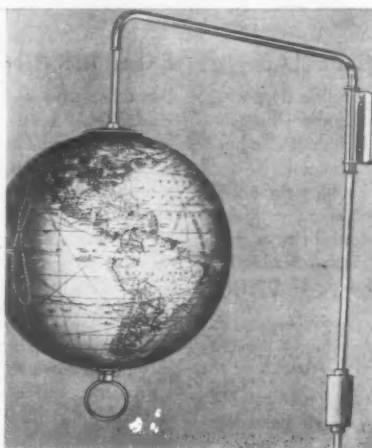
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Science News Letter, January 30, 1960



## Nature Ramblings



By HORACE LOFTIN

Counting Bills

WHILE MOST of us were still nestled snug in our beds, more than 7,000 eager bird watchers were braving the early morning cold in search of extra species for their lists in the 60th annual Christmas Bird Count during the recent holidays.

This midwinter bird census involved day-long counts of kinds and numbers of birds seen in selected areas 15 miles in diameter. These Christmas Count areas ranged from semitropical Florida to the frozen fields of Alaska. It will be several months before the results of this Christmas Count are compiled. So let us take a look at last year's count to see what kind of results we may expect.

In 1958, more than 500 species of birds were seen during the Christmas Count. In terms of numbers of individuals, 33,890,845 birds were reported. By far the most abundant wintering bird in North America was the red-winged blackbird. This familiar bird of field and swamp was noted in 321 localities, in numbers total-



ing 13,976,815 individuals. Runner-up was the common grackle, with more than 8,000,000 birds counted.

That unwelcomed immigrant from Europe, the starling, was the third most common bird found in midwinter in the United States and Canada. Observers in 501 census areas counted 4,183,000 of these pests.

Incidentally, another European immigrant, the English sparrow, took all honors for being seen in the greatest number of places—535 census areas to be exact. In numbers, the English sparrow gave a count of 277,000 individuals.

A pleasant change from blackbirds and the like, the fourth most abundant species of bird in North America at midwinter was the mallard duck, with 1,178,449 seen at 372 census stations. Ducks and geese in general were among the most numerous species. For example, the pintail had a total count of 438,800 and the Canada goose, nearly 300,000.

Numbers of birds seen often did not reveal which species were in widest distribution. For instance, the red-wing was seen in only 321 areas in spite of its huge numbers, while the English sparrow with only 277,000 individuals was reported from 535 areas. The second most widely distributed bird in midwinter was the downy woodpecker, counted in 516 areas, though only 14,500 individuals were seen in all.

Some of the low counts are interesting, if only for their exotic names. Among species with just one individual reported are blue-faced booby, red phalarope, whiskered owl, black-eared bushtit and the lazuli bunting.

Science News Letter, January 30, 1960